Ballard

1929

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VEGETABLE GROWERS' NEWS LETTER

Issued by
The Maryland Vegetable Growers' Association.
W. R. Ballard, Secretary-Treasurer.

Vol. VI. No. 1. College Park, Maryland. January, 1929.

The Green Manure Discussion: Considerable interest developed over the discussion of the green manure question at the recent meetings in Baltimore. Without attempting to report on all the points brought out, it seems desirable to note the tendency to place greater stress on the non-legumes as green cover crops because of their dependability. It appears to be more economical to use commercial fertilizers as a source of nitrogen, consequently legumes are in less demand. Growers find rye, wheat, and similar types satisfactory as winter cover crops. In New Jersey, according to Professor H. R. Cox, growers are experimenting with new plants which produce large amounts of green succulent matter in a short period for use between money crops. Of these, sunflowers is reported to make as much as eighteen inches growth in three weeks time. The seed is comparatively cheap, in fact the stock sold for chicken feed is commonly used.

The Mexican Bean Beetle: A lively interest was manifested in Dr. E. N. Cory's address regarding the bean beetle and its control. The probabilities are that the infestation next year will be pretty general over the State. Dr. Cory warned the growers to equip themselves to fight the pest effectively at its first appearance in order to curtail egg laying. This will help to keep down the injuries from the later broods. Sprays or dusts to be most effective should be applied to the lower surfaces of the leaves. An up to date duster is preferred, if an apparatus is to be purchased. If the grower already has a sprayer, it can be used. A calcium arsenate and lime dust makes an effective mixture.

Detailed information on the control of this insect may be secured by writing to the Extension Service.

Letting the Machine Do the Work: In his address on newer developments in tools and equipment for the vegetable grower, Professor E. R. Gross predicted that the future vegetable grower would place increasingly greater reliance upon labor saving devices in order to compete with other industries. Electric power is destined to play an important part in the solving of these problems.

In conclusion Professor Gross said:

"I have touched upon several types of machines used in vegetable production-planters, cultivators, fertilizing machines, tractors, dusters, transplanters, washers, tying machines, etc. After all the chief

object is to reduce hand labor, reduce cost, and increase profit. It may require less intensive use of lands, a greater investment in equipment, and quite likely will tend toward larger farms. The small operator must always use the maximum of hand labor, the larger operator must develop and use machines."

If you want to read this paper in its entirety, be sure that your annual dues are paid up to date. This will insure your getting the Annual Report when it is ready to be distributed.

The Ten Ton Tomato Club: Notwithstanding the fact that last season was distinctly unfavorable for the tomato crop, four growers qualified for membership in the Ten Ton Tomato Club fostered by the Extension Service in cooperation with the Tri-State Packers Association. A good deal of interest was aroused by the success of the first year's experience and the indications at present are that many growers will enroll this year and with a favorable season a greater number of growers should be able to make the grade.

Our Mailing List: The list of those to whom the News Letter is to go is being revised. If you have found the information contained in it of value, the Secretary will appreciate it if you willpromptly pay your dues, if you have not already done so. This will insure your name a place on the list.

A three-Day School: Programs are out for the second annual Canners' and Field Men's School which is to be held in the Horticultural Greenhouses at College Park, Maryland on February 19th, 20th, and 21st. The Tri-State Packers' Association is cooperating with the College of Agriculture and the Agricultural Extension Division of the University of Maryland in putting on this School. All of the important crops grown in this section for canning purposes will be carefully considered.

Special attention will be given to the subject of controlling the Mexican Bean Beetle, which promises to be a major pest in the coming season.

VEGETABLE GROWERS NEWS LETTER.

Issued by
The Maryland Vegetable Growers Association.
W. R. Ballard, Secretary-Treasurer.

Vol. VI. No. 2. College Park, Maryland. February 1929.

Early Beets for Canning: Considerable interest has developed during the last few years in Maryland in the production of beets for canning purposes. The beet develops best under cool conditions so that generally the early spring crop is most likely to succeed. If a stand can be secured when planted in midsummer, they usually develop well in the fall.

The Detroit Dark Red is the variety generally favored and this matures in about sixty days. A sandy, well-drained, loam soil is preferred for the early crop, and it should be well prepared and thoroughly pulverized. Beets are very sensitive to acid soil so that it is extremely important to use sufficient lime to correct any acid condition, although beets should be planted only on fertile soils which usually do not lack lime. To develop high quality beets, growth must be continuous and rapid. Manure is valuable for sandy soils and for sandy loams. Heavy clay soils are not suitable for this crop. Fifteen to twenty tons of manure per acre may be used to advantage, but it is best applied to the previous crop. From 750 to 1000 pounds of a 7-6-5 fertilizer may be applied.

Seed should be planted as soon as hard freezes are over. For hand cultivation rows may be from ten to twelve inches apart, and for horse cultivation rows may be eighteen to twenty-four inches apart. The amount of seed required per acre would be 6-8 pounds for close planting, and 4-6 pounds for wide planting. Seed should be covered from 3/4 to 1-1/2 inches deep, depending on the character of the soil.

Cultivation should be clean and shallow. Thinning is not generally practiced when grown for the cannery.

Mr. Mitchell Grows Sweet Corn: At the recent Canners School held at the University of Maryland, Mr. F. O. Mitchell of Perryman, Maryland described an interesting method of producing shoe peg sweet corn which he follows. As soon as the corn is harvested for the cannery, he has the stalks disced down. The field is then left until planting time next year. By the use of tractors and modern tools he plows deeply and prepares ground thoroughly just ahead of the planter. He does not rotate -- has grown sweet corn on the same field for twenty-seven years without deterioration in the crop. He has less difficulty with the weeds when he plows just ahead of the planter. He fertilizes annually with 400 pounds per acre of a 4-8-7 mixture.

He packs nothing but whole grain shoe peg corn and must can it young. He grades his seed to insure a good stand and uniform quality and ripening.

He used a modern two-row corn worker run by a tractor and does better work than can be done with mules or horses. He makes his rows 3-1/2 feet apart and the hills 27 inches apart. He likes to scatter the kernels in the hill for from 4 to 6 inches. He plants fairly thick because he wants small grains.

Mr. N. H. Fooks of Preston, Maryland made the statement that the results of his experiments indicated that sweet corn should contain from 25 to 30 percent of starch for ideal canning quality.

Help With the Bean Beetle: Information Card No. 24, written by Dr. E. N. Cory, State Entomologist gives in a simple manner what is considered to be the only safe and effective course for the canner, trucker, and market gradener to follow in the control of the Mexican Bean Beetle during 1929. Copies of these cards may be had upon request by addressing Extension Service, University of Maryland, College Park.

The Market Gardener and the Chain Store: An interesting situation is developing in some of the cities where the chain grocery store is spreading by leaps and bounds. Customers are finding they can buy fresh vegetables of good quality from these stores the year around at moderate prices to the disadvantage of the individual store as well as of the farmer's markets. One grower recently made the statement that one customer visits the farmers markets in Washington now to six that did five years ago.

Buyers for the chain stores will not buy usually from local market gardeners because they do not have sufficient volume of good quality, well graded stocks to supply all their stores. Unless the grower can compete successfully with this new style of competition, his future may not be so rosy.

Plant Protectors: English gardeners make great use of various forms of protectors for plants set into the field at an early season when they would be subject to serious injury from late frosts. Indications are that protectors of some form might be of value in Maryland on some crops. A number of types are on the market and interest in their use is growing. Sometimes cold, drying winds whip plants to pieces and cause as much damage as moderately low temperatures.

The cloth covered cold frame is coming to the front in the growing of good quality tomato plants for the canning industry. It has distinct advantages in that it affords considerable protection from the cold as well as aiding in the control of the flea beetle. The Extension Service will soon issue the latest revision of the bulletin, "More Tomatoes from Fewer Acres," in which the most up to date recommendations for the production of this crop will be found.

VEGETABLE GROWERS NEWS LETTER.

Issued by
Maryland Vegetable Growers Association,
W.R. Ballard
Secretary-Treasurer.

Vol. VI. No. 3. College Park, Maryland. March,1929.

THE CANNERS SCHOOL

A very enthusiastic and successful Canners and Field Mens' School was held recently at the University of Maryland and the summary of the talks and discussions were of such value that it seems desirable to send this report to members of the Association. Through the courtesy of Professor F. W. Geise, a supply has been made available for the members and is transmitted herewith.

REPORT

of

CANNERS' AND FIELD MEN'S SCHOOL

Held under the Auspices of the College of Agriculture and Agricultural Extension Division of the University of Maryland in Cooperation With the Tri-State Packers' Association.

February 19th, 20th, and 21st , 1929

at

College Park, Maryland

TUESDAY, FEBRUARY 19th

9:00 A. M. - ADDRESS OF WELCOME

"Our Problems and Interests Are Mutual"
by
Dr. E. C. Auchter, Department of Horticulture, University of Maryland, and Principal Horticulturist, U. S. Department of Agriculture

This meeting was called primarily to bring the canners and field men into closer contact with the workers and the work at the University of Maryland so that each might profit by the experience and problems of the other. The problems of the canners and the men at College are closely connected. These men are trying to solve the outstanding problems with which the canner is confronted and mutual cooperation is necessary and essential for successful results. The canners of Maryland are to be commended on their support of the University in the past, and it is hoped that even closer cooperation can be maintained between the two groups in the future. The members of the staff welcome suggestions from the canners, and it is only by knowing the problems of the industry that they can outline their work to cover the most important phases.

9:15 A.M. - CORN. Chairman, Mr. James Shriver, Westminster, Maryland

"Seed Corn Problems"
by
Mr. N. H. Fooks, Preston, Maryland

There has been a failure of the sweet corn crop in certain sections for the past two years, and this is due, in part, at least, to poor seed. Selections were begun a number of years ago to try to improve the seed stock, but the mistake was made of selecting out too much starch. In 1928, 500 individual ears were tested for starch content and planted in groups accordingly. A wide variation was found in the starch content of the different ears, but the group running from 25% to 30% starch

seemed to can out more nearly ideal than the other lots. Analyses of this crop indicate that the lots reproduced true to their original starch content.

In 1927 a first generation hybrid corn was tried at Mountain Lake Park and gave very promising results. However, in 1928, another hybrid known as Red Leaf Evergreen was planted at Mount Airy with very disastrous results. From one-half to two-thirds of this corn died, supposedly with root rot.

In some ear-to-row tests, which were conducted at Mount Airy several years ago, the yields for the individual rows varied between 17 and 53 pounds. It would seem that a good program for the improvement of seed stock would be as follows: first, ear-to-row tests of selected ears; second, selections from these rows of the best type ears; and third, testing for the proper starch content.

Discussion:

The general opinion relative to the Red Leaf Evergreen hybrid corn is that it will not stand up under Maryland conditions.

The corn with high starch content gives a greater number of cases per ton.

The starch content as stated above was for dry seed corn.

The starch content varied between 15 and 41% for different ears.

Some hybrid strains have given very satisfactory results in the State.

"Comparisons of Evergreen Types"
by
Dr. W. B. Kemp, College Park, Maryland

The following is a progress report on Maryland sugar corn comparison and breeding as carried out under Federal funds.

Comparison of Stowell's Evergreen Type

Variety	Yield							Cut Corn per ton	Sweetness	Tenderness
	1925		1926		1928		Av.			
	Tons per Acre	Per cent of Comm.	Tons per Acre	Per cent of Comm.	Tons per Acre	Per cent of Comm.	Per cent of Comm.			
F_1			2.87	147	2.94	171	159	high	low	low
Station Hybrid	4.25	135	2.15	110	2.28	133	126	high	low	standard
State Stowells	3.50	111	1.93	99	1.98	115	108	low	standard	standard
Commercial A	3.15	100	1.95	100	1.72	100	100	standard	standard	standard
Commercial B	3.13	99	1.88	96			98	standard	standard	standard

Effect of Thickness of Stand upon the Different Varieties. (1928)

Variety	Wt. per ear at 2 stalks	Percentage change by increasing to 3 stalks per hill			
		No. of ears	Wt. per ear	Yield per Acre	Cut corn per ton
F_1	.97	+23.	-11.6	+ 8.5	-8.9
Station Hybrid	.75	+ 2.	+0.7	+2.7	
State Stowells	.65	+29.	-14.9	+ 9.5	
Commercial A	.63	+44.	-18.1	+18.1	

F_1 - Refers to a first generation cross between two inbred strains. A few seed lots are available for distribution in 1929.

Station Hybrid - refers to a variety in process of development at the Experiment Station. Some of this was sent to a few canners for commercial trial in 1928. We have no evidence that its behavior in the different parts of the State was different from its behavior at the Experiment Station. There will be more seed available for distribution in 1929. In the meantime efforts to improve the variety continue.

State Stowells - is a strain of Stowell's Evergreen that has been grown in Maryland for some years.

Commercial A and B - refers to strains purchased each year from commercial seedsmen. One of these is used as a standard for comparison. In 1927 root worm caused such irregularity in growth that no yield records were taken on the comparison plots

Discussion:

A first generation hybrid strain would be expected to act more uniformly than a commercial strain. If one plant went down with root rot, we would expect all to go down, under similar conditions. Apparently Red Leaf Evergreen is quite susceptible to root rot. However, other strains might be bred which would be very resistent to the disease.

An ear with deep kernels is more likely to mold than an ear with shallow kernels. In natural selection, this would tend to increase the shallow-kernelled ears.

The Station Hybrid has shown very good quality except in sweetness. It requires from 10% to 15% more sugar than other strains. The larger size of the ears of this strain is due to the size of the ear rather than to the size of the individual kernels.

The strains of corn with smaller fodder give a greater per cent increase for thick planting than the larger stalked strains. Thick planting causes the ears to become smaller and decreases the cut corn per ton.

"How Can We Produce More and Better Sugar Corn?"
by
Mr. F.O. Mitchell, Perryman, Maryland

Experience has shown that it is cheaper to produce more tons per acre and plant less acres. The general experience seems to be that it is better to turn green fodder down immediately after the harvest, but very good results have been secured by disking the stalks and leaving until Spring before plowing. The use of high-powered machinery has allowed several operations to be combined into one. Most of the work is done with a tractor. It has been found that 400 pounds of a 4-8-7 fertilizer per acre give very successful results even when manure is not used. Some use has been made of cover crops. Plowing has not been done any sooner than was necessary to keep ahead of the planter. It is believed that less damage is caused by weeds after this method than by plowing one month or six weeks in advance. Heavy land would not work quite so well with a tractor by this method as early in the season. However, Spring plowing would probably give better results even on heavy land.

Discussion:

Scarlet clover and sweet clover have been very successful as cover crops.

An application of 300 pounds of fertilizer is broadcast on the land and 100 pounds is added with the seed.

Round Table Discussion

1. Is there any advantage in using native-grown seed?
   Some advantage in yield per acre.

2. Does Maryland-grown seed become shallow or increase in starch faster than northern-grown seed?
   Depth of kernel and amount of starch depend almost entirely upon the method of selection.

3. What is the present information on hybrid types of corn?
   Some growers are using hybrid corn on a rather large scale. Some strains have great uniformity and give large yields.

4. Does it pay to use hybrid corn? Who should produce the seed?
   The experience of a good many growers has been that a good hybrid strain is desirable. Seedsmen are in a better position to produce this seed than canners or growers. Developing and testing is necessary.

5. Should seed be treated? What is the best material?
   Treatment gives some protection during germination and early seedling growth and is good insurance. Some of the several dust preparations on the market seem suitable.

6. What is a good average germination of sweet corn?
From 90 to 95 per cent.

7. Will partially coating seed with coal tar before planting do any good?
The method has been recommended for use against crows, but is not generally practiced.

8. Is it desirable to grade seed for size?
Grading is profitable and highly desirable.

9. What kinds and amounts of fertilizer are recommended?
About a 5-8-5 is the most common fertilizer used. Applications usually run from 200 to 400 pounds.

10. What is the extreme amount of a balanced fertilizer that can be used with profit and how should it be applied?
Up to 600 pounds has been found profitable. Very little should be put in the row with the corn.

11. What is the effect of potash on quality?
Potash hastens maturity but shows very little difference in the canned product.

12. Does sweet corn need more nitrogen than field corn?
Yes.

13. How much lime should be applied?
It is better to depend on tests than on general recommendations. The soil should be close to neutral.

14. What is the control for wire worms?
No practical control for the large corn grower.

15. Is it definitely proved that we should not sucker sweet corn?
Yes. Suckering usually does more harm than good.

16. What is the cause of barren stalks?
It may be due to any one of many factors causing poor conditions for continuation of growth.

17. What are the comparative yields per ton of Country Gentleman, Narrow Grain Evergreen, and Stowell's Evergreen?
There seems to be some advantage in favor of the larger kernel types.

2:00 P. M. - SPECIAL VEGETABLE CROPS , Chairman, Mr. Harry Inwold, Baltimore, Maryland

(Because of the time limit, asparagus was the only crop discussed.)

Round Table Discussion

1. How can rust be controlled?
   Use resistant varieties and keep all plants cut down during the growing season.

2. What varieties are most resistant to rust? Where can these be secured?
   Mary and Martha Washington are good resistant varieties. The Pedigreed Seed Company, Hartsville, S. C., is the original producer. These may be obtained from many other seedsmen, also.

3. Are the new rust-resistant varieties suitable for the market in yield and quality?
   Yes.

4. What materials can be used for control of beetles?
   There is no control during the cutting season. Good control may be secured for the following year by spraying with calcium or lead arsenate after the cutting season.

5. What is a balanced fertilizer for asparagus?
   500 pounds nitrate of soda, 500 pounds kanit, and 200 pounds acid phosphate have given as good results as 8 to 10 tons of manure.

6. How much fertilizer should be used and when should it be applied?
   1500 to 2000 pounds applied in the early Spring.

7. How deep should the crowns be planted?
   Plant about 8 inches deep and cover lightly at first.

8. At what distance should the crops be set?
   The average planting distance is about 5 feet by 18 inches.

9. May shoots be cut the first Spring?
   If well fertilized, a light cutting may be practiced.

10. What is the cost of bringing an acre of asparagus into bearing?
    About $275.00.

2:30 P. M. - ECONOMICS OF THE CANNING INDUSTRY IN MARYLAND , Chairman, Dr. S. H. DeVault, College Park, Maryland

"Cost of Production of Tomatoes, Sweet Corn, and Peas, and Factors Influencing Yields. Results of Three Years' Study in Maryland"
by
Mr. W.P. Walker, College Park, Maryland

The average cost of producing an acre of tomatoes, for the three years 1925-27, was $80.75 in Harford County and $54.80 in the Eastern Shore area, or an average of $57.91 for the State. With tomatoes selling at

$15 per ton it is necessary to produce 4.5 tons per acre in Harford County and 3.5 tons in the Eastern Shore area to cover costs, and 6.0 tons in Harford County and 5.0 tons in the Eastern Shore area to provide a margin of profit.

The cost of producing a ton of tomatoes during the three years was $10.28 in Harford County and $11.87 in the Eastern Shore area, or an average of $11.57 for the State.

The net income per acre from tomatoes averaged $34.69 in Harford County and $15.50 in the Eastern Shore area, with an average of $17.79 for the State. During the three years, 65 per cent of the farmers, growing 66 per cent of the tomato acreage, produced at a profit.

The average cost of producing an acre of sweet corn during the the three years was $33.39 in the North Central area and $27.88 in the Eastern Shore area, or $31.59 for the State. To cover cost of production with sweet corn selling at $14 per ton it is necessary to produce 2.4 tons per acre in the North Central area and 2.0 tons in the Eastern Shore area. To provide a margin of profit a yield of 3.25 tons per acre in the North Central area and 3.0 tons in the Eastern Shore area is necessary. The cost per ton in the State was $13.05.

The net income per acre from sweet corn was $1.23. During the three years, 49 per cent of the farms, growing 51 per cent of the acreage, produced sweet corn at a profit.

The average cost of producing an acre of peas in Maryland was $43.97. With peas selling at $60 per ton, a yield of about 0.75 of a ton per acre covers the cost of production and a yield of 1.0 ton is necessary for a margin of profit. The cost per ton was $40.93.

The net income per acre from peas was $21.26. During the three years, 78 per cent of the farms, growing 84 per cent of the pea acreage, produced peas at a profit.

The greatest opportunity for decreasing the cost of production lies in increasing the yield per acre, especially in the case of tomatoes. With the average fertility of soil in Maryland, larger yields per acre are obtained by the application of more labor, fertilizer, and other materials per acre, which increases rather than decreases the growing cost per acre, but results in a yield sufficient to lower the cost per ton.

Statement by Dr. DeVault, Chairman

The Experiment Station of the University of Maryland has just completed a three-year study of the economics of the canning industry in Maryland. The study was divided into two parts: one pertaining to the cost of producing tomatoes, sweet corn, and peas for the years 1925, 1926, and 1927, and the factors influencing yields and profits; the other study pertaining to canning costs, distribution, and consumption of tomatoes, sweet corn, and peas for the three years. Records were obtained from growers' and canners' costs in all the important producing regions of the State.

"Results of a Study of Canning Costs,
Distribution, and Consumption"
by
Mr. W.J.Hart, College Park, Maryland

In the study of the canning industry just completed by the Maryland Station, thorough consideration was given to the cost of manufacture and distribution of tomatoes, sweet corn, and peas; earnings on investment; factors affecting costs and profits; storage and finance; distribution and consumption of Maryland products; consumers' preferences; and many other problems affecting the welfare of the industry.

The details of this study are reported in Experiment Station Bulletin #301 which has just come from the press and may be had upon request. A number of the facts brought out in this report are given below in the Round Table discussion.

Round Table Discussion

1. What does it cost to pack tomatoes, sweet corn, and peas in Maryland?
The average costs in cents per dozen cans, 1925-27, were as follows: Tomatoes--No. 2's, 82.1; No. 3's, 127.3; No. 1's, 50.8; No.10's, 359.0
Corn (crushed)--No. 2's, 88.3
Peas - No. 2's, 93.0

2. What do average costs mean?
The average gives a concise picture of a group as a whole and is easily understood. For its proper interpretation, however, knowledge of the distribution of the component items is necessary.

3. What are some of the principal factors affecting costs of manufacture and profits?
Diversity of business; amount of investment; volume packed; quality of raw stock; selling methods; etc.

4. How may canners' storage and financial conditions be improved?
Many canners would benefit from storage of goods in their own warehouses under the provisions of the U. S. Warehouse Act.

5. Where do canned foods packed in Maryland go for consumption?
Records were obtained on the destination of three million cases of canned foods shipped from Maryland in 1926. Between 50% and 60% went to the Middle Atlantic and New England States. Approximately 48% went to the states of New York and Pennsylvania.

6. What do we know about the preference of Maryland consumers for canned foods:
In general, Marylanders buy canned foods mainly on the basis of quality, price, and brand.

7. Where do Maryland consumers get their canned foods?

On the basis of data obtained from 176 retail and wholesale distributors in 1927, approximately 80% of the tomatoes, 75% - 80% of the corn, and 25% of the peas consumed in Maryland were packed within the State.

8. How may local canners increase the consumptive demands for their products?

By producing more of the better quality foods and by bringing the good qualities of Maryland products to the attention of buyers.

WEDNESDAY, FEBRUARY 20th

9:00 A.M. - PEAS. Chairman, Mr. F. Hall Wrightson, Easton, Maryland

"Influence of Temperature on Yield and Quality of Canning"
by
Dr. V. R. Boswell, U. S. Department of Agriculture,
Washington, D. C.

Successive plantings of peas made from the earliest practicable date at about ten-day intervals in five different seasons showed that in any one season each planting matured in less time than the preceding one, and in general, the successively later plantings gave successively lower yields. Decreasing yields were apparently the result of increasingly high temperatures encountered by the successively later plantings. The harmful effect of late planting was most pronounced in seasons in which very warm weather occurred early.

The growth and maturing processes in pea seeds are characterized by a rapid decrease in the percentage of sugar and soluble nitrogenous substances; and by an increase of starch, total acid hydrolyzable substances and insoluble nitrogen compounds (largely proteins). These changes are so rapid that a slightly delayed harvest results in markedly lower quality. The high sugar and low starch content of young peas are closely associated with, and perhaps largely responsible for, their high quality; the converse is doubtless also true.

Contrary to popular belief, peas which mature late as a result of late planting were not consistently starchier nor lower in sugar than early maturing peas harvested at apparently the same stage of development. A delay in harvest of any one planting however results in not only a lower quality resulting from more large peas, but also a distinctly lower sugar and higher starch content of peas of any one size. The No. 2's or No. 3's harvested late are quite different from the same sizes harvested at the proper time. Late planting does result in more rapid development and maturity, thus increasing the difficulty of a timely harvest, often resulting in the peas passing beyond the proper stage before harvest is completed. Herein, it is believed, lies the explanation of the lower quality often found in a late maturing crop.

Even though late planting results in no inherently lower quality of product if it is harvested at the proper time, it should be avoided because of the harmful effect upon yield and the increased difficulty, if not impossibility, of a timely harvest.

The causes of marked differences in growth, color, nodule formation and yield of peas were sought by a study of soil-acidity, nitrate content and organic matter content. Good and medium nodule formation was accompanied by correspondingly good and medium growth and yield per plant regardless of the conditions under which the plants were grown. Slight or poor nodule formation apparently was not associated with significantly greater growth than was found in plants free of nodules. A pH range of 5.8 to 6.7 and a variation in lime requirement of 225 to 1450 pounds per acre in various fields evidently had little effect upon yield if other factors were favorable. The more acid areas often contained the more organic matter and produced the better growth of plants and yield of peas. Of the factors studied, soil organic matter was the most closely positively correlated with plant growth, yield, and nodule formation. The better nodule growth occurred in the better soils. Thus it appears that soil fertility is of first importance, even in the matter of securing satisfactory response from inoculation.

"Crop Rotation an Advantage and a Necessity in the Production of Peas"
by
Mr. A. O. Saulsbury, Ridgely, Maryland

Rotation is considered a good practice for all crops, but farmers like to have peas on the same ground for two or more years to get better inoculation. After root rot became serious, the disease always showed up worse in the second year than in the first, and it was necessary to practice a rotation with peas only one year in four. During the past twelve years in which this four-year rotation has been used, the disease has never caused trouble on land that was not infected previously. It is still serious in those fields which had the disease before the rotation system was begun. Some infected fields planted back in peas after a seven-year rotation have been almost as seriously affected as before the rotation.

Discussion:

Root rot has been serious on land after a ten-year rotation.

Vetch seems to be nearly as important in propagating the disease as peas, and it has been observed in some cases on alfalfa.

The disease seems to live over longer on heavy than on light soils.

Preliminary work in New Jersey indicates that heavy applications of certain fertilizers are beneficial in controlling the disease.

Fusarium wilt infects scattered plants but does not kill out all the plants in patches as is characteristic of root rot. Wilt is more important than root rot in Western Maryland but has not been found on the Eastern Shore.

"Results of Some Field Experiments at Ridgely"
by
Mr. T.H. White, College Park, Maryland

Disease Resistance of Varieties: A number of types of Alaska peas were planted on land where disease had been bad the previous season. They were all affected with blight, some badly and some lightly. Extra amounts of lime, potash, and nitrogen on land where blight had been bad the previous season had no effect in cutting down the disease.

Rotations with and without Legumes: Rotations have been tested in which legumes were used each year and others in which cereals and vegetables have come between the pea crops. Some plots have had peas each year. Some blight has appeared during the ten years that the experiments have been run but it has not been serious on any of the plots.

Rate of Seeding: About four bushels per acre has given the best results.

Seed Grading: There was no noticeable difference in the time of maturity of the different sizes. The medium sized seed produced the most pods and the least vines. Extremely small seed produced very little crop and it seems it might be well to sift out this small size and not use it in planting. Only 3 to 5% graded small.

Profits from Fertilizers on Poor Fields: For the years 1926 to 1928 the higher grades of fertilizers have made the most profit. An application of 600 pounds of a 7-6-5 has given an average annual profit of $27.50 per acre.

Profits from Fertilizers on Good Fields: Applications of 400 pounds of a 4-8-4 for the years 1922-1924 gave an average profit of 26.16 per acre; 800 pounds gave $23.16; and 1200 pounds gave only $11.97. Applications of 400 to 500 pounds of a good fertilizer, such as a 7-6-5, will give good profit and carry the land.

Rotation for the Best Crop to Precede Peas: Fertilizers being the same, the best crop preceding peas has been tomatoes. Soy bean hay, field corn, and cowpea hay have given fair results. The plots producing oats and clover hay, Sixty Day corn, and late potatoes have given the poorest crops of peas.

Inoculation: Experiments conducted for a number of years seem to indicate that nodules on the roots are not the most important factor under certain conditions in the yield of peas. Rich land usually contains the nodule-making organisms, and such land should always be selected for peas.

Round Table Discussion

1. What part of Maryland is best adapted for pea production?
   Considering the cost of production as well as the yield, there is very little difference between Western Maryland and the Eastern Shore.

2. How true to type do most commercial pea strains run?
   Most samples tested at College last year were remarkably good. Only 5 or 6 samples out of 75 were bad. The samples from a given firm were usually uniform.

3. What is the ideal type of pea for canning on the Eastern Shore?
Alaska is the only available type which has shown general adaptability.

4. Is seed treatment recommended?
No. It has given good results in some cases but should not be practiced if seed is to be inoculated.

5. What is the best rate of seeding?
About 4 bushels per acre seems to be the most general practice, but there is a tendency now to plant 4⅓ bushels.

6. Does heavy soil take less seed than light soil?
It would seem advisable to use slightly more seed on heavy soil than on light soil.

7. What rotation should be used for root rot?
Not less than a four-year rotation, avoiding vetch and alfalfa.

8. Do peas need much lime? When should it be applied?
Soil should be slightly acid but should not show lime requirement of more than 1000 pounds per acre. Apply during the preparation of the land or in any place in the rotation.

9. What is the best way to get oxides for soil purposes?
Use the material which is cheapest and most convenient.

10. How deep should peas be planted?
From 2 to 4 inches, depending on the type of soil and the amount of moisture.

11. Is sowing both ways advisable when a seven-inch drill is used?
Sowing both ways is not necessary but vines stand up better.

12. What are the recent experimental results on the control of aphids?
There are no practical control measures. The insect runs in about a five-year cycle with injury only one year. Vigorously growing vines are not so seriously attacked.

13. What is the effect of fertilizer on rate of maturity and hardness of peas?
Potash has not caused an earlier maturity. The use of ammonia increases the yield to such an extent that the grower can afford to harvest at an earlier stage, thereby getting better quality.

14. What is the best time to inoculate seed?
As late as possible before planting.

2:00 P. M. - THE BEAN CROPS, Chairman, Mr. Ralph O. Dulany, Fruitland, Maryland

"Bean Diseases"
by
Mr. H. A. Hunter, College Park, Maryland

The work reported here is that which was carried out in Maryland last year. Dr. Harter's report will cover the individual diseases and the seed situation in the West.

Probably the most important problem confronting bean growers from the disease standpoint is the control of anthracnose. The use of seed produced in the semi-arid regions of the West has been recommended for the past several years and the results of field surveys and tests have shown much less anthracnose in the fields planted with western-grown seed. The survey this year shows 22.2% infection with the disease in fields planted with eastern seed and .38% in fields with western seed.

The occurrence of the disease in some fields planted with western seed indicated that the organism causing the trouble might live over the Winter in the soil. Tests conducted last year in several parts of the State added further evidence to the indication. While the results are not conclusive, they suggest that bean land which has produced a diseased crop should be rotated.

Bean mosaic, which it was thought might become serious with the use of western seed has never been observed in injurious amounts in Maryland, and tests last year showed very little difference in the per cent of the disease in plots planted with diseased and healthy seed.

Bacterial blight was severe in some fields last year but on the average caused only a small loss. The figures of the field survey show 2.27% infection in fields planted with western seed and 0.78% in fields from eastern seed.

Diseases of lima beans caused heavy losses in a few fields but were relatively unimportant from the State's standpoint. Bacterial spot, pod blight, and downy mildew are the three most important diseases. Where any of these are common and injurious they may be controlled by crop rotation and spraying with Bordeaux mixture or dusting with copper-lime dust. The spray is more effective, but arsenic may be combined with the copper-lime dust for use against both the Mexican bean beetle and the diseases.

"Bean Diseases"
by
Dr. L. L. Harter, U. S. Dept. of Agriculture
Washington, D. C.

Most of the western seed, of the varieties used in Maryland, is produced in the sections around Greeley, Colorado, and Twin Falls, Idaho. The difficulty in getting western seed is due to the fact that many other crops pay better than the bean seed crop.

Anthracnose has not been observed or reported west of Denver, except once or twice from California. The disease has not occurred in the Greeley region for the last five years, but bacterial blight was especially serious there last year. Blight was prevalent in Utah. There was an excellent crop around Billings, Montana. Some blight was present but was not serious. No anthracnose or blight was observed in southern Idaho. Mosaic was very bad and caused particularly heavy losses on the Refugee variety. No blight or anthracnose occurred in Washington or Oregon, but these states have a limited production.

California has wonderful possibilities as a bean seed producing section, but the industry is undeveloped because of competition with higher priced crops.

Western seed will probably give a cleaner crop in the East than eastern seed, but the supply will probably not meet the demand until new territory is developed.

Mosaic does not seem to be a problem in the East or South, probably due to the temperature relations.

"Mexican Bean Beetle"
by
Dr. E.N. Cory, College Park, Maryland

The life history of the Mexican bean beetle as observed at College Park last year is given below. The emergence in an average year will probably be earlier by about one week.

First emergence	--	June 3
First eggs		June 8
First larvae		June 20
First pupae		July 3
First generation, adult		July 8
eggs		July 18
larvae		July 21
pupae		August 18
adults		August 20
Second generation, eggs		August 29
larvae		September 5
pupae		September 28
adults		September 30

The insect feeds in both the larval and adult stages. There are no very accurate and complete figures available on the cost of spraying and dusting, but the cost of four applications of spray per acre will probably run somewhere between $4.50 and $8.00 and the cost of dusting will run from slightly less to slightly more than spraying, depending upon conditions and number of applications.

The following information, from University of Maryland Extension Service Information Card No. 24, gives the high points in the control of the insect:

1. Plan your campaign now. Specialists and your county agent will be available to visit your farms, to consult with and help you plan your attack, discuss the applicability of spraying or dusting to your particular problems and later advise with you on control work.

2. Spraying or dusting should begin as soon as adult beetles appear in considerable numbers in the bean fields.

3. Spraying, based on Federal experience of eight years, has been more efficient in actual percentage of control of beetles and larvae than dusting. Therefore, unless already equipped with dusting machinery, the canner should spray large acreages for most effective control. On isolated contract fields of two acres or less, where the canner does not furnish spraying equipment, dusting is more practicable, since no thoroughly efficient and economical hand sprayers are available.

4. If you spray, adjust the nozzles so that two are directed upward and backward from pipes that reach nearly to the ground and one downward directly over the center of the row.

5. For spraying use 1 lb. of magnesium arsenate in 50 gallons of water. Apply 90 to 100 gallons of spray per acre. Use good pressure, thorough agitation, and small hole disks. Discard and renew disks after fifteen hours use.

6. Dusting has given good results in our experience and has several advantages over spraying, particularly where a large number of fields, distant from the central packing house must be treated with a given time limit. Dusters in all sizes, each efficient for its type, are available. Speed of operation, adaptability to a wide range of conditions (including type of soil and weather influence on traction, rough hilly ground, absence of adequate water supply for spraying), and mobility are some of the advantages of the duster. Use the type suited to the acreage.

7. For dusting use 1 lb. of magnesium arsenate to 3 to 5 lbs. of lime. Apply 10 to 15 lbs. per acre or use a commercially mixed copper-arsenic-lime dust consisting of approximately 20 per cent copper sulphate (the finely ground copper sulphate or the equivalent of monohydrated copper sulphate) 20 per cent calcium arsenate and 60 per cent of hydrated lime. Use 10 to 15 lbs. per acre.

8. In general, it is advised, that factory mixed dust be purchased unless a self-mixing duster is used. In all cases purchase the best materials available. This applies equally to spraying materials.

9. Adjust the discharge pipes so that they will lie close to the ground and direct the nozzles backward and slightly upward. Cut down the air blasts so that the plants are not whipped about.

10. The number of applications (dust or spray) will depend upon the abundance and distribution of rains, growth of plants and the spread of migration of beetles into fields over a short or long period; usually applications at 8 to 10 day intervals are necessary.

11. Applications should be discontinued when the pods of green beans are formed. In case later applications, due to continued migration into the field, are necessary, extra care should be exorcised in washing cannery beans. Those going directly to the consumer should be sprayed with pyrethrum instead of arsenicals, if applications after the pods are formed are necessary.

12. Plow down fields after the crop is picked to destroy any stages, particularly pupae, that may be on the plants. Use a wide bottom plow, such as has been devised and placed on the market for corn borer control.

13. The changes from last year's recommendations are to bring them in harmony with Federal recommendations. Calcium arsenate gave good control in most cases last year, but due to injury by some types under certain conditions it is thought best to discontinue its use, except in the copper-lime combination, until more is known about the standardization of the poison and the conditions that bring about injury.

Discussion:

Spraying during blossoming is liable to cause dropping.

The beetle will attack soybeans, in some cases causing about as much injury as on stringless beans.

Hand dusters or sprayers have been found very useful to catch untreated strips behind power machines.

Round Table Discussion

1. How many diseases cause any great amount of damage and how can they be controlled?

   Anthracnose and bacterial blight are the two most important diseases in Maryland. Use disease-free seed from the West and rotate.

2. Are any varieties of beans resistant to disease?

   Refugee is somewhat resistant to blight but very susceptible to mosaic. Giant, Burpee's and Full Measure are mediumly resistant to blight.

3. Would copper added to beetle dust control diseases?

   Very little information for snap beans. It would help in the control of lima bean diseases.

4. What is the danger from mosaic in Maryland?

   Very little observed, even when diseased seed were used.

5. Will anthracnose live over in the land?

   Preliminary experiments indicate that it will.

6. Is crop rotation necessary to control bean diseases?

   Incomplete evidence, but seems highly desirable.

7. What is the best western source of seed?

   Idaho is probably the best source with a developed industry.

8. How many diseases are carried in the seed?

   Anthracnose, bacterial blight and mosaic are the three most important.

9. Should seed be treated with the new dusts?
Not recommended.

10. Will manganese increase the string bean crop? How and when should it be applied?
Probably of no value in this section.

11. What factors increase the prevalence of seed corn maggot on beans?
Turning down green manure crops immediately before planting might cause more trouble.

12. Will the beetle be worse this year than last?
It should be more widespread and destructive.

13. Should spraying or dusting begin early whether the beetle is present or not?
Begin soon after the first beetles appear.

14. How many acres will a four-row power duster handle if the fields run from three to ten acres in size?
Four acres per hour of continuous dusting.

15. Are all commercial calcium arsenic dusts suitable for beetle control?
No. Some cause severe burning.

16. Is dusting at one time of day more likely to cause burning than at another time?
Not necessarily.

17. Can dust be applied successfully when the wind is blowing if a power duster is used?
A trailer should be used if the wind is blowing.

18. Would a trailer help in dusting for beetles?
Yes, but it should be supported by rods so that it does not drag on the vines.

19. How many applications on an average are necessary for beetle control?
It will probably take about four applications. Spray or dust every 7 to 10 days.

20. What is the best type of duster for large acreages?
Some suitable type of power machine.

21. What is the most efficient way to handle string beans from vine to factory?
Handling in bags is the general practice.

22. How much uniformity is there in appearance and ripening of lima beans?
Very little information available. There is some variation even within varieties.

23. What is the control for mildew and blight of lima beans?
Rotate, and in extreme cases use copper in conjunction with beetle treatment. Do not cultivate when the vines are damp.

THURSDAY, FEBRUARY 21st

9:00 A.M. - TOMATOES. Chairman, Mr. E. A. Montell, Camden, New Jersey

"A Study of the Factors Responsible for Disintegration of Canned Tomatoes"
by
Drs. C. M. Conrad and C. O. Appleman, College Park, Maryland

The factors studied were those usually encountered in the canning industry, including (a) storage outdoors and in cold room before working up, (b) time of scalding, (c) ripeness of fruits, (d) size of fruit, (e) time from packing of cans to sealing, and (f) effects of after-cooking. Each of these factors was varied over the extremes and the resulting effect on the break-up of the fruit was noted. Simultaneously a study was made of the cementing substances (pectic constituents) which make the tissues cohere. These substances are broken down and decomposed more or less under the different conditions. The studies, which are still of a preliminary nature, have indicated that conditions which lessen decomposition of the cementing substances also help to prevent break-up of the fruits on canning. The most important conditions in this respect appear to be the following: (a) minimum period of scalding, (b) the earliest stage of ripeness consistent with trade requirements, (c) immediate sealing in cans after scalding the fruit, and (d) rapid cooling after processing.

"Tomato Plants and How We Produce Them "
by
Mr. H. W. Pearson, Bridgeville, Delaware

More experience has been had with pepper plant production than with tomatoes, and the following report gives the method which has been successfully used with this crop. The methods used in plant production of the two crops are so nearly the same that the following procedure is equally applicable for tomatoes.

The best results have been secured with beds heated by hot water. The boiler house is located at the lowest point of the grade and is sufficiently deep to allow the outlet on the boiler to be below any pipe in the plant beds. A unit of 10 beds, 10 feet wide and 100 feet long, was operated with one boiler with a rating of 6925 feet. The beds are made of a good grade of oak, 1½ inches by 12 inches by 10 feet, with cross pieces every 3 feet to carry the muslin. The 12 inch boards are used in front as well as at the back of the beds. The side and end boards are staked every 5 feet with 2 x 3 inch stakes, 30 inches long. Experience has shown that it is best to use a good grade of muslin with the strips running the entire length of the bed. The muslin is nailed to one side and allowed to hang over the other with an inch and a quarter pipe in a hem for a weight.

The pipes in the beds were covered with three inches of soil and two inches of a mixture of stable manure and good soil. Thirty-six quarts of dry fish were sown on each bed and this was covered with one inch of good soil.

The seed was planted about five days after the heat was started. The rows were five inches apart across the bed and the seed was planted about one-half inch deep, five or six seed to the inch. This gave a stand of about four plants to the inch. Some were thinned to two plants to the inch, but the unthinned seemed to be equally as good as the thinned. Every bed produced about 50,000 plants.

The beds which have been used for tomato plants are built in the same way as those described above, but are not heated. About two inches of good manure has been used instead.

The 36 inch muslin used costs 14½¢ per yard and will last about three years. It does not pay to treat with any of the paraffin-like preparations.

(Mr. Ray Taylor, of Thurmont, Maryland, who was scheduled to talk on tomato plant production, was not present, but Mr. L. M. Goodwin reported that his method was to start the plants in a greenhouse and then transfer to flats in glass-cover coldframes. The plants are spotted 2" by 2" in the flats. The growers take the flats to their farms in order to avoid pulling the plants until ready for use. The plants raised in this manner gave better results than southern-grown plants.)

"The High Points of Production - Constructive Methods"
by
Mr. L. M. Goodwin, Canning Crops Specialist, Denton, Maryland

The cure in tomato production is through greater yields per acre, and the use of fertilizers is one of the most important considerations in increasing the yields. The average application in the State is probably under 500 lbs. per acre. It has been demonstrated that in addition to humus in one form or another, it will pay to use from 800 to 1000 lbs. of a good grade fertilizer, such as a 5 - 8 - 10. On heavy soils all of this should be broadcast. On the lighter soils that are not capable of holding enough nitrogen to last the entire season, it would seem well to make a later side dressing.

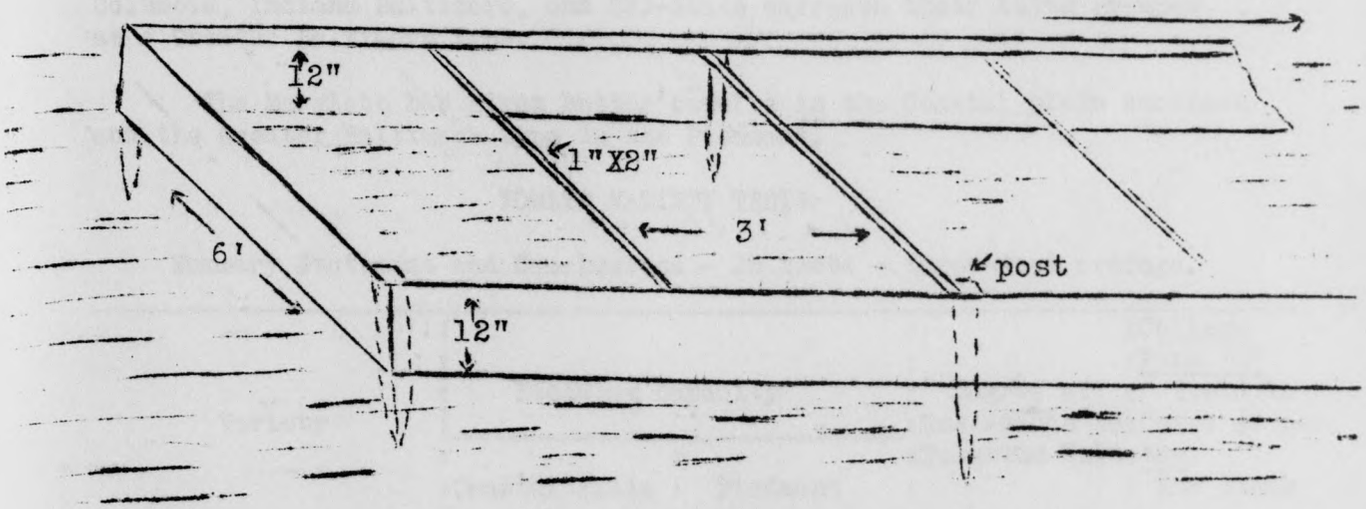
Results of thirty-nine demonstrations in growing plants under cloth last year seem to justify the extra expense and effort to get the plants in the field earlier. Plants set in the field early make a better growth and get more fruit set before they are affected by the unfavorable conditions of mid-season. Plants set around May 20th have given yields of from two to three tons per acre more than plants set the first part of June.

The diagrams and directions on the following page give the method of construction of the recommended type of coldframe. The principal changes this year are the 12 inch front and cross pieces every 3 feet instead of the 6 inch front and cross pieces at 6 foot intervals as recommended last year.

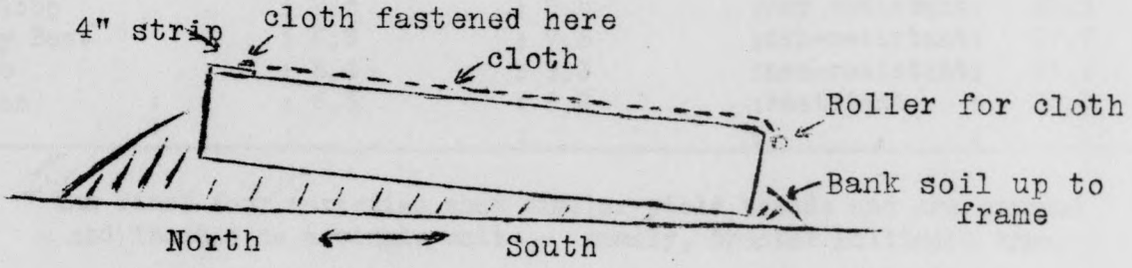
CLOTH-COVERED COLDFRAME

Revised plan for construction

made as long as needed



General View of Frame



End View

Sides and ends - 12" board rough lumber
Posts - 2" x 2" two feet long
Cross pieces to support cloth and roller - 1" x 2" six feet long
Strip on North side of bed to which cloth is fastened 1" x 4"
Roller - Cloth fastened between two 1" x 2" strips, break joints to make continuous roller. Best to use planed lumber for roller.
Cloth - A fairly heavy grade of unbleached muslin (do not use cheese cloth) two yards wide or two one yard widths can be sewed together. When the cover is down the roller should hang over the edge of the frame, thus holding the cover firmly and preventing the wind getting under it.
Loops of fish cord are sewed to the six foot margins and these are slipped over nails driven into the frame to hold the cloth in position.

(For instruction on Management see Maryland Extension Bulletin #40)

"Results of Tomato Variety Testing - What It Means"
by
Professor Fred W. Geise, College Park, Maryland

The summary of 25 variety tests over a 3 year period, as shown in the accompanying tables, shows that the behavior of Greater Baltimore, Columbia, Indiana Baltimore, and Tri-State warrants their being grouped as a Greater Baltimore type.

The Marglobe has given better results in the Coastal plain sections and the Greater Baltimore type in the Piedmont.

TOMATO VARIETY TESTS

Summary Statement and Conclusions - 25 tests - three-year average.

Variety	Yielding Capacity		Degree of Resistance to Fusarium Wilt	College Park '27 Yield in Cases #2 per ton Raw Stock
	Coastal Plain	Piedmont		
Greater Baltimore	7.3 tons/acre	9.5 tons/acre	non-resistant	35.6
Columbia	7.2	9.5	very resistant	30.1
Indiana Baltimore	7.2	9.6	non-resistant	36.0
Tri-State	6.9	9.5	non-resistant	34.1
AVER. (Gr. Balt. type)	7.15*	9.5*		
Marglobe	7.5	8.5	very resistant	40.9
Bonny Best	6.8	7.6	non-resistant	37.7
Stone	6.4	8.3	non-resistant	34.4
Norton	6.5	8.8	resistant	35.0

* The first four varieties show similar yield trends and are grouped and treated as a single unit - namely, Greater Baltimore type.

Variety	Relative Time of First Harvest	Relative Time between First & Last Harvest	Largest Amount Harvested at One Picking
Greater Baltimore	Medium	47 days	24.05%
Columbia	Medium	-	-
Indiana Baltimore	Medium	46	24.63
Tri-State	Medium	45	19.72
Marglobe	Early-Medium	48	24.23
Bonny Best	Early	39	30.69
Stone	Late	45	22.65
Norton	Late	-	-

Round Table Discussion

1. What is the best method of maintaining seed stock for tomatoes?
   Hill selection of best hills;row tests of outstanding hills; elimination of weak and combination of strong hills.

2. Should seed be treated? With what?
   Some slight advantage. Use Semesan, Dipdust, or mercuric chloride.

3. What does certification imply?
   Varietal purity, trueness to type, and reasonable freedom from seed-borne diseases.

4. What kind of fertilizer should be used in the plant bed?
   Make liberal application of well-rotted manure and apply 2 to 3 pounds of a 5 - 8 - 5 fertilizer for every 20 running feet of covered plant bed.

5. If the canner grows plants in cloth-covered coldframes for the growers, what price should he charge?
   About $1.50 per thousand.

6. Will cloth-covered coldframes produce plants as early as they should be set in the field for best results?
   Yes.

7. What is the comparative cost of growing plants in cloth-covered coldframes and in open beds?
   Cloth-covered coldframe plants cost about fifty cents per thousand more.

8. Has damping-off been serious in cloth-covered coldframes?
Practically no damage has been observed so far.

9. How many times is it necessary to dust for flea beetles?
Keep the plants covered; probably 4 or 5 applications necessary.

10. Is the Marglobe a good variety for the entire Eastern Shore, or will some other variety give better results in some sections?
Marglobe has given best average yield. Greater Baltimore may give better yields on the heavier, wilt-free soils.

11. What are the best varieties in the wilt-infected areas? In the non-infected areas?
Wilt-infected soil - Marglobe, Norton, Norduke, and Columbia.
Non-infected soil - Marglobe, Indiana Baltimore, Tri-State, or some other Greater Baltimore type.

12. What is the status of liming for tomatoes?
No direct benefit but important in the general rotation.

13. Does potash affect the solidity of the canned tomato?
Mr. George R. Cobb reported that in one year's tests high potash on the Eastern Shore has given a product that stands up better than that receiving less potash.

14. What green manure may be used instead of stable manure?
Scarlet clover and vetch, seeded in sweet corn, has given excellent results.

15. Will late side dressings of nitrate make tomatoes hold their foliage?
Of particular benefit on the lighter soils.

16. What is a good grade of fertilizer for a light sandy soil?
About a 4 - 8 - 10; a late side dressing seems advisable.

17. What phosphate analysis should be used on tomatoes where no manure is used? What quantity should be used?
Something close to a 7 - 6 - 5; up to 1000 pounds.

18. Is there any danger of diseases if cannery waste is put on the field and turned under in the fall?
Better to put on land that is not to be used for tomatoes.

19. Can mosaic be controlled? How?
Roguing before cultivation is very successful.

20. How much good will fall plowing do in controlling blight?
Good practice on land that will stand it. The better the turning under the better the control.

21. What sections of the State are infected with wilt?
The central and southern Eastern Shore is most severely affected.

22. Is spraying recommended for blight?
Not generally.

23. Is there any way of controlling cut worms except by the use of poison bait?
No other successful and practical method.

24. How can growers get their tomatoes picked as U. S. No. 1's?
Would not be practical to eliminate No. 2's, but quality could be improved by closer supervision and the proper inducement.

25. How long may tomatoes be held at the cannery without trouble?
Dependent on weather conditions, but should be canned as soon as possible.

26. What puree yields may be expected from various varieties of tomatoes?
Some variation in varieties, but seasonal conditions are more important factors.

27. What relation is there between varieties of tomatoes and puree color?
The degree of ripeness is more important than varietal differences.

28. What constitutes standard tomatoes?
See U. S. grades.

29. How do canners select tomatoes for extra standard or fancy packing?
Hand select after peeling; fancy - whole tomatoes of good red color, extra standard - nearly whole but slightly off color.

VEGETABLE GROWERS' NEWS LETTER.

Issued by
The Maryland Vegetable Growers' Association.
W. R. Ballard, Secretary-Treasurer.

Vol. VI. No. 4. College Park, Maryland. April, 1929.

Market Conditions Change: A short time ago a local trucker was discussing the great changes which had taken place recently in the marketing of vegetables around Washington, D. C. A good deal of discussion and agitation grew out of the proposed location of the Farmer's Market, but this grower made a very significant statement, to the effect that not one-sixth of the number of buyers who visited the farmer's market five years ago are to be found there now.

In reciting his experiences, he told of having a crop of cabbage to dispose of and took the matter up with the buyer for one of the chain grocery stores. This buyer told him he had a hundred stores to supply. They sold at a standard price and consequently must have a uniform quality in the stock handled. It was therefore economy as well as much more satisfactory, to go on the wholesale market and buy a carload of well graded cabbage.

The whole tendency of the times seems to be that of mass production and the market gardeners around the big cities must be alive to the situation and modify their methods to suit changing conditions. Dissatisfied with the site selected by Congress for the new Farmer's Market in Washington, the local truckers of Maryland and Virginia have formed an association and established their own market at Fifth and K. Streets, N. W. The success of this enterprise will be watched with considerable interest.

Mulch Paper: It is evident from inquiries received that there is a lively interest in the possibilities of using the paper mulch on various crops. It is likely that it will be found practicable on some crops, and not on others. Recently a remarkable report was published in the Market Growers Journal of April 15th, from H. G. Putman, Vocational Agricultural Teacher, Potterville High School.

He used eighteen inch squares of asphalt paper placed over 120 hills of Bender's Surprise muskmelon. Twenty hills were grown under caps made of a glass substitute while 400 hills were grown in the open.

The temperature of the soil under the paper mulch was found to be 30° warmer than in the open. The soil remained moist throughout the summer. The paper seemed to give protection from field mice and cut worms.

The melons under the paper mulch matured fully a month earlier than those in the open ground and returned a profit per hill of $1.05½ compared with .17 per hill for those in the open field.

Several Maryland growers are planning to try out the mulch papers on various crops and it will perhaps be determined before many months upon what crops and in what situations, the use of this material is profitable.

The Corn Borer: It is reported that the Ohio Experiment Station is looking for types of corn resistant to the attacks of the corn borer. The Mexican pod corn has shown some promise and attempts will be made to cross this with other types for the purpose of developing this resistance in commercial strains.

Potato Investigations: A bulletin which should be of interest to early potato growers will soon be issued by the Extension Service of the Universityof Maryland. The authors, Dr. R. A. Jehle and E. I. Oswald, discuss the various tests which have been made during the past three or four years to determine the best sources of seed stock. In these tests certified seed gave higher yields than uncertified stock.

The results also indicate that the care given to the production of seed stocks is a more important factor in influencing yields than the particular locality in which the seed is grown.

This work is being continued with particular emphasis on the effect upon the yield of different methods of seed production used by growers in the principal seed producing areas. Seed produced in the following localities is being tested: Maryland, Maine, Michigan, Minnesota, New York, Ontario, Prince Edward Island, South Dakota, Vermont, and Wisconsin.

A tour will be conducted about the middle of June to visit the plots which are located in Worcester County. The tests will be fully explained, and everyone will be given an opportunity to observe the results of these tests.

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W. R. Ballard, Secretary-Treasurer.

Vol. VI. No. 5. College Park, Maryland. May, 1929

Buying Tomatoes on Grade: An interesting bulletin has just been received from the Indiana Experiment Station under the above title. The period covered is for the years 1927 and 1928, although during the first year no tomatoes were actually bought or sold on the graded basis. Some interest in this project has been shown among Maryland canners, and the following quotation from the summary of this bulletin may be of interest.

"The grading system not only greatly increased the percentage of No. 1's and decreased the culls, but also enabled the canner to buy his product more economically. On a graded basis, with a differential for No. 1's and No. 2's varying from $15.00 for No. 1's and $10.00 for No. 2's to $18.00 for No. 1's and $10.00 for No. 2's, the cost average from $13.07 to $14.31 per ton of usable tomatoes. At the same factories the cost on a flat basis figured on the prevailing price ($12.00 to $14.00 per ton) averaged from $12.57 to $15.06 per ton. In 1927 the cost on a flat rate basis at these same factories averaged from $14.54 to $17.67 per ton of usable tomatoes (culls eliminated in computing cost in both the graded and flat rate basis). The cut in cost in 1928 was due to the elimination of a larger part of cull tomatoes.

"Results secured from careful experimental work and corroborated by results secured at the various factories also showed both a decided betterment of the quality of the manufactured product and an increase in the quantity that could be packed from each ton of raw product.

"The results for the past two years have proven that the grading plan as now worked out in Indiana, using U. S. Grades, is simple, economical, and practicable. The results show that fewer green tomatoes, less rotten and defective tomatoes and more red ripe, sound tomatoes can be secured by this method than any other that has been tried during the history of the production of this crop in Indiana."

The Mediteranean Fruit Fly: The outbreak of the mediteranean fruit fly in sections of Florida constitutes a very serious menace. All wild and cultivated fruits, except pineapples, cocoanuts, and other nuts are susceptible to infestation. Many vegetables such as peppers of all kinds, pumpkins, gourds, squashes, tomatoes, cantaloupes, cucumbers, beans of all kinds (including string beans, Lima beans and cowpeas) and eggplant are subject to attack.

Both the Federal Government and the State Government of Florida are moving vigorously to stamp out the pest.

Fortunately the pest will not stand the winters very far north. On the other hand the insect has a very short life cycle so that grape fruit or other fruits infested with the fly which may get by the embargo, may serve to give the pest a start in Maryland with the possibility of doing considerable damage during the summer before cold weather sets in.

Mexican Bean Beetle Gets Early Start: The adult bean beetle is already actively engaged in laying eggs so that the bean grower will need to start his spraying or dusting campaign early. Dr. Cory, State Entomologist, has issued circulars giving the latest information on methods of control. Many of the commercial growers in Maryland have purchased power spraying or dusting equipment and are prepared to carry on a vigorous and thorough campaign of control measures.

Tomato Plants: Good results have followed the use of plant bed cloth for the production of early tomato plants for canning purposes. Where the proper methods are used excellent plants can be grown under muslin cloth. Some growers, however, still seed too thickly and as a consequence the plants become spindly from overcrowding. Some difficulty has arisen this season from the sagging of the cloth in the abundant rains and the continuous dripping of water along the lower edge of the bed.

Mr. L. M. Goodwin, Canning Crops Specialist has just returned from a trip to Georgia where he visited many of the large plant growing establishments. He found much variation in the growing methods employed as well as in the quality of the plants produced. The better growers have very excellent plants which are now ready for shipment.

The Paper Mulch Again: Circular No. 77, a contribution of the Biophysical Laboratory, U. S. Department of Agriculture, Washington, D. C. has just been received. In this publication by L. H. Flint, suggestions are given for paper mulch trials. Three methods of applying the mulch paper are discussed as well as the relation of soil conditions to the use of the mulch. If any growers are contemplating the use of the paper mulch this little circular may be of interest.

VEGETABLE GROWERS' NEWS LETTER.

Issued by
The Maryland Vegetable Growers' Association,
W. R. Ballard, Secretary-Treasurer.

Vol. VI. No. 6. College Park, Maryland. June, 1929.

A Warning to Canteloupe Growers: Canteloupe growers like to have manure to use in the hill for this crop, but the difficulty of securing adequate supplies has induced certain growers to try out commercial fertilizers. Specimen plants brought in from Anne Arundel County growers indicate that certain precautions should be taken in order to insure success with the chemical fertilizers. Canteloupes must have sweet soil, and the widespread use of sulfate of ammonia and other commercial forms have a tendency to leave an acid reaction. The soil in which the unhealthy specimens were examined showed a decided acid reaction -- two tons of lime to the acre would be required to correct the acidity.

Growers can now secure on the market a very simple soil testkit at a small cost which will enable him to determine in a few minutes whether his soil needs lime or not. The method is so simple that any grower could quickly learn to use it. A good type is manufactured by the LaMotte Chemical Company of Baltimore. In a small porcelain dish a little soil is placed. It is then saturated with a solution, allowed to stand about a minute, and the solution drained to another compartment. The characteristic color is then compared with the accompanying color chart which gives the degree of acidity and the amount of lime needed to correct it. A little booklet lists a great variety of plantings with information as to their lime requirements.

The canteloupe grower, especially, could well afford to test his soils when he must depend largely upon commercial fertilizers. In these days of accurate knowledge, a grower should not take chances by guessing at a condition which can be so easily controlled.

The Potato Tour: The Sixth Annual Potato Tour was held Friday, June 21st in Worcester County, about seventy-five persons attending. The purpose of the tour was to observe the plots in which seed stocks from different sources were being tested and the use of various fertilizer combinations.

A summary of results secured during the last three or four years shows that northern grown Irish Cobbler seed gave the largest yields with mountain grown and fall grown seed second and third respectively. Difference in yield from certified seed stock of individual growers in same locality varied greatly and indicates that the methods of production employed are more important factors than the particular locality in which seed is grown.

Average yield from certified stock was 143.2 bushels per acre, while from uncertified seed the yield was 123.8 bushels per acre.

On the whole the seed which came up and matured the earliest gave the largest yield.

There was a decided correlation between the number of missing, weak, and diseased plants and the yield. Smallest yields came from plots with the largest number of missing, weak, and diseased plants.

Other features besides the tour of inspection were short talks by Specialists and a disease detection contest.

Mr. T. H. White of the Maryland Station discussed "What Size Seed Piece Should We Plant?" Dr. J.E. Metzger, University of Maryland, stressed "The Value of Soil Organic Matter in Potato Growing." Mr. A. E. Mercker of the U. S. Department of Agriculture reviewed, "The Potato Situation for 1929-1930" H. L. Bailey, in charge of Seed Certification work in Vermont, County Agent Strong of Accomac County, Virginia, and Fred Corliss, Sherman Mills, Maine, were other speakers.

Twenty-one contestants started in the disease detection race, and the winners, F. J. Dukes, J. M. Lankford, H. M. Mears, and J. R. Shay each received a barrel of tuber unit seed stock as a prize. The prize stock was donated by the Michigan Potato Growers Exchange, Cadillac, Michigan; Fred Corliss, Sherman Mills, Michigan; Charles Lanphierd, Midland, Michigan; and W. R. Thompson, Caribon, Maine.

Are You in a Pickle? You may be if you grow cucumbers unless you rouge out those "white pickle" plants. Recent inspections in Worcester County revealed that every field visited had some mosaic (white pickle) and some fields were badly affected. The disease is detected by the mottling and crinkling of the leaves which begins near the tips of the vines and works back to the older leaves. Affected plants should be pulled and carried out of the field to prevent the disease being spread through insects and tools to healthy plants. The disease is carried over winter on ground cherry, milk weeds, and poke berry, and such weeds should be destroyed in the vicinity of the cucumber field.

Virus Diseases of the Potato: Perusal of a recent bulletin from the Wisconsin Experiment Station shows how technical research work on horticultural crops has become . This publication is entitled, "The Classification of Certain Virus Diseases of the Potato." The results of these studies impress one with the difficulties involved in trying to identify or even detect the presence of virus diseases in this crop from superficial examination. One or more viruses have apparently been transmitted from apparently healthy potatoes and doubt is thrown on the efficacy of ordinary eradication methods by roguing.

The investigations tend to decrease the number of virus diseases rather than to increase them and the problem may thereby become simplified. Suggestions are offered as to the feasibility of separating certain combined viruses through the use of treatments of extracts based on their respective properties. (This is Research Bulletin 87 and the author is James Johnson.

VEGETABLE GROWERS' NEWS LETTER.

Issued by
The Maryland Vegetable Growers Association.
W. R. Ballard, Secretary-Treasurer.

Vol. VI. No. 7. College Park, Maryland. July, 1929.

How Much Acidity? In the June number the note regarding the detrimental effect of acidity on the growth of canteloupes may have given a wrong impression, as to the guilt of the sulfate of ammonia. The question has arisen as to just how much acidity results from the use of this nitrogenous fertilizer. From the information available it appears that for each pound of sulfate of ammonia an equal amount of stone lime (half that amount of burned lime) should be used to prevent an increase in acidity from this cause.

"The Vegetables of New York" The New York Agricultural Experiment Station has embarked upon a monumental project, the preparation of "The Vegetables of New York", a publication comparable to the several volumes on the fruits of New York. The work is to be contained in three volumes, to be subdivided into thirteen parts as follows:

Vol I.	Part 1.	Peas.
	Part 2.	Beans.
	Part 3.	Cucumbers, squashes, pumpkins, muskmelons, watermelons.
	Part 4.	Corn.
	Part 5.	Onions, leeks, garlic, shallots, chives.
Vol. II.	Part 1.	Tomatoes, peppers, egg plants.
	Part 2.	Lettuce, chicory, endive, salsify.
	Part 3.	Celery, celeriac, parsnips, carrots, parsely.
	Part 4.	Asparagus, rhubarb, okra, pot herbs.
Vol. III.	Part 1.	Cabbage, cauliflower.
	Part 2.	Brussels sprouts, collards, kale, kohl-rabi, Chinese cabbage, Borecole.
	Part 3.	Beets, chards, spinach.
	Part 4.	Mustard, cress, radish, horseradish, turnips, rutabagas.

Unlike the volumes on fruits, cultural accounts have had to be omitted, but the aim is to give a more or less complete record of the development of each vegetable as grown in the United States as a whole. The text will include, the botanical status of each vegetable; full horticultural descriptions of species and their varieties; and as complete a history of the evolution of each vegetable as will show its past and present standing.

Peas of New York: Part I. of the first volume is now being distributed. As with the previous volumes on the various fruits, a number of excellent illustrations in natural colors add greatly to the appearance and intsrest of this publication. The information contained in the text will

be of special interest to breeders of peas, but there is much to attract all workers with this important vegetable.

New Bulletins: Several new bulletins of interest to vegetable growers have just been issued by the Maryland Experiment Station. Dr. S. H. DeVault and Wm. Paul Walker are authors of "An Economic Study of the Production of Sweet Corn and Peas in Maryland." The authors conclude that more attention should be given by farmers to the use of fertilizers in sweet corn production; more cultivation should be done with light harrow or two row cultivators; separate plantings two or more weeks apart would help canner to pack a better quality product and result in higher prices to the grower. In the case of poor stands, the entire field should be replanted rather than filling in missing hills.

The practice of sowing fertilizer with the peas is questionable, especially when more than three-hundred pounds of fertilizer per acre are used. Fall plowing for peas is recommended and the use of lime, especially on the heavier soils, is stressed. There is danger of loss from root diseases where peas are planted in the same field more than two years in succession.

In "An Economic Study of the Production of Tomatoes in Maryland", Wm. Paul Walker recommends more care in obtaining better seed, a greater use of the cloth covered cold frame and other means of securing early plants in order to produce greater yields. Spraying or dusting the plant bed is good insurance. Wilt resistant varieties should be used in wilt infected areas. In addition to the usual amounts of barnyard or green manures applied, farmers can profitably use at least five-hundred pounds of a high grade fertilizer per acre on tomatoes. Fall plowing helps to control early blight and Septoria. Transplanting machines and two horse cultivators are advised for large acreages. More care is needed in setting plants and in the control of cutworms.

In bulletin 301, "The Manufacture and Distribution of Tomatoes, Sweet Corn, and Peas in Maryland," W. J. Hart, states that the purpose of these studies was to help make canning in Maryland more profitable by the elimination of bad practices; the discovery and encouragement of more efficient methods and to aid the Experiment Station in the formulation of a sound policy with reference to the industry — a policy based on experimental evidence rather than on hearsay information.

Mr. Hart states that "Unsound financing has been a deterrent influence to the highest success of the canning business in Maryland from its inception. Perhaps no other one factor has contributed more to uneconomical production and to the instability of the market than this one." Attention is called to the advantages to be realized from storage in Government licensed warehouses as an aid toward placing the industry on a better financial basis.

Dr. V. R. Boswell concluded from a study of "The Factors Influencing Yield and Quality of Peas" that soil organic matter was the factor most closely postively correlated with plant growth, yield, and nodule formation. Soil fertility appears to be of first importance even in the matter of inoculation. The importance of using more nitrogen in fertilizer applications of from four-hundred to five-hundred pounds of mixtures varying in analyses from 5-8-3 to 7-6-5 are recommended.

The earlier plantings consistently gave higher yields, but little difference was noted in quality of peas provided harvesting was done at the proper stage. However, changes from sugar to starch take place much more rapidly late in the season making it more difficult to harvest at the proper stage of ripening

Of unusual interest to canners is the results of "A Study of Spinach Varieties with Special Reference to their Canning Qualities." This is published in bulletin No. 307. The author, Horace B. Farley, discusses thoroughly the characteristics of thirteen varieties of spinach grown and canned. "The ultimate quality of the produce from the over-wintered and spring crops of King Denmark, Thick Leaved Round, Virginia Savoy, and Viroflay is superior to that from other varieties."

"When quality, together with yield, is considered, Viroflay, Thick Leaved Round, and King of Denmark are recommended for the overwintered and spring crops."

Virginia Savoy is recommended because of its hardiness and for its blight resisting qualities.

In bulletin No. 308, E. N. Cory and N. A. Eaton discuss the results of tests to determine the "Insecticidal Value of Pyrethrum Soaps."

Bulletin No. 309 discusses the "Amounts of Fertilizer and Manure Required for Maintenance of Fertility for Vegetable Production." The conclusions of the authors Thomas H. White and V. R. Boswell are:

"After all, the grower is interested in yields only insofar as they increase the money (net) returns. The reader must discriminate between the values of different treatments based upon yield only, and those based upon net return of money. The data presented show that manure produces the desired yields, but does so at high cost if it must be purchased. If manure is available at low cost, or produced on the farm, there is no question as to its value. If it must be bought at a high price and hauled considerable distances, it appears that under conditions similar to those described for this experiment, it can be replaced more profitably by crop residues and commercial fertilizer."

VEGETABLE GROWERS NEWS LETTER

Issued by

The Maryland Vegetable Growers Association
W. R. Ballard, Secretary-Treasurer

Vol. VI No, 8 College Park, Maryland August 1929.

The Annual Report

The annual report of the Association containing the papers delivered at the meeting in Baltimore last January is being mailed to all paid-up members. If you do not receive your copy promptly, notify the Secretary.

The officers had hoped to supplement the annual meeting in January with a summer tour to visit sections of Anne Arundel and Baltimore Counties, but after considerable correspondence and careful consideration, it was decided that it would not be feasible this year.

SPIPPING TROUBLES WITH WATERMELONS

The production of watermelons in Maryland is restricted mainly to certain areas on the Eastern Shore. If any of the members are growing and shipping the watermelon, they would be interested in Circular No. 74 from the U. S. Department of Agriculture, entitled Chemical Injury to Watermelons in Transit. The author, W. W. Gilbert finds that box cars previously loaded with fertilizers often have sufficient chemicals left on the walls and floors to seriously affect the melons when such cars are used in shipment.

The most pronounced injury results when moist, scant bedding is used. The following chemicals have been found injurious under certain conditions; common salt, nitrate of soda, sulphate of ammonia, sulphate of potash, muriate of potash, superphosphate, a mixed fertilizer, a watermelon fertilizer.

GLOBE ARTIBHOKE

This is not to be confused with the tubers of the Jerusalem artichoke which belongs to the sunflower family. The globe artichoke , cynara scolymus, is a thistle like plant common as a wild plant in southern Europe. This vegetable is highly prized in France and in some other European Countries, but it has never become popular in the United States although it has been grown to a limited extent in the South for over a hundred years.

The artichoke is a tender perennial and needs winter protection in regions where the temperature goes much below freezing. Covering the crowns with coal ashes in November seems to be the best method of protection.

The crop may be grown readily from seed. It varies greatly, however, so that the best practice is to propagate from the best individuals by the use of suckers which are produced freely.

The artichoke is a heavy feeder and must have rich soil. The fertility of the soil is a determining factor in the spacing of the plants but setting plants 2 to 3 feet apart in rows 4 to 5 feet apart would be good average distances.

The edible portion is the fleshy flower head or bur as it is called. The heads should be cut while still young and tender. Usually an inch or two of the stem is left and after being carefully graded are packed in special containers for market.

TOMATOES OF GOOD QUALITY

The dry weather seems to have less injurious effect to the tomato crop than to some other vegetables. Temperatures at certain periods seemed to be favorable for fruit setting, and diseases such as septoria have not been prevalent. In some sections blossom end rot has caused some damage, especially where the soil has dried out deeply.

Unusually good specimens of tomatoes have been exhibited at some of the County fairs. Considerable variation in yields has been noted. This has been due somewhat to differences in stands, soil fertility and culture.

Prices have been good in most sections and a premium is being paid over contract prices.

VEGETABLE GROWERS' NEWS LETTER

Issued by
Maryland Vegetable Growers' Association,
W. R. Ballard, Secretary-Treasurer,

Vol. VI. No. 9. College Park, Maryland. September, 1929.

Yellows Resistant Wakefield Cabbage: In past years the University of Maryland has demonstrated pretty conclusively that the use of yellows resistant strains of midseason cabbage will insure favorable crops even on soils known to be highly infested with the disease germs. More recently there has been a demand for similar resistant strains of the early Jersey Wakefiled types. Unfortunately seed of such strains has not been available in commercial quantities so that it has been impossible to do more than recommend the growing of the early cabbage only on land not recently planted to cabbage or related crops.

The Experiment Station has been testing out a resistant strain and recently distributed four pounds of seed secured from Walker of Wisconsin to six growers in the Patapsco se ction of Baltimore County. The results of these tests will be watched with considerable interest.

Burying Your Troubles: Insects and diseases seem to be very efficient instruments for preventing surpluses in many of the vegetable crops. There is constant warfare between vegetable growers and these various pests. Certain cultural methods have long been known as aids in keeping down such troubles. As a specific instance, the beneficial effects of plowing down tomato plant refuse as soon as the picking season is over on the control of leaf spot (septoria) might be cited. Plowing down bean plant refuse as soon as the crop has been picked is conducive also to the control of the Mexican bean beetle.

Rotation of crops in preventing the accumulation of disease spores and the propagation of insects, is also an important method of control not to be overlooked.

As a rule fall plowing should be followed by the seeding of a cover crop. For this late in the season rye or wheat would probably be as effective as anything. The tendency seems to be in the direction of using non-legumes as green manures because of the fact that they are generally more reliable, the seed is cheaper and lower prices on commercial nitrates makes it possible to provide nitrogenous plant foods in this way more economically.

Time Soon to Plant Spinach: For wintering over, spinach may be seeded about the first of October. Because of its disease resisting qualities the Virginia Savoy is to be recommended.

As is well known, spinach requires a rich soil for its best development. It has a relatively high lime requirement. Hartwell in Rhode Island "found that almost no growth resulted on soil rendered acid by applications of sulfate of ammonia. Even when the acidity of the sulphate plot was neutralized with lime, four times as much growth resulted on the more alkaline soil treated with nitrate of soda." Zimmerly of the Norfolk Station found that the best growth occurred between Ph 7.33 and 8.22.

Nitrate of soda is generally preferred for top dressing. Pulverized forms now on the market seem to facilitate the distribution of this fertilizer. There seems to be a tendency to substitute the use of commercial fertilizers for stable manure. The problem of weed control is somewhat simplified when fields are not continually reseeded from the manure pile.

Side Lines: Market gardeners often find a side line such as growing cut flowers in the garden brings in considerable revenue during the season. Peonies, gladiolus, dahlias, tulips, narcissus and many of the easily grown annuals such as zinnias, cornflowers, larkspur, marigolds, straw flowers and similar types find sale on the market or at roadside stands. There is, perhaps a field here that might be investigated with profit by some of the members of the Association.

Interest in all phases of ornamental gardening has greatly increased in recent years, and every indication points to a continuance of this interest, and consequently to the demand for plant material for embellishing the home grounds or the garden.

Vegetable growers in this section who erect greenhouses for the purpose of forcing vegetables almost invariably change over to the production of flowers because of the relatively higher returns from these crops.

VEGETABLE GROWERS' NEWS LETTER.

Issued by
The Maryland Vegetable Growers Association.
W. R. Ballard, Secretary-Treasurer.

Vol. VI. No. 10 College Park, Maryland. October 1929.

Fall Set Cabbage

Vegetable growers in some sections of Maryland are quite successful in the production of early cabbage by setting plants in the fall and wintering them over.

The usual proceedure is to sow the seed the first week in September. The earlier plants are started the greater is the percentage which run up to seed in the spring rather than forming a head. Plants are set in the field on rich, well-manured soil, about the last of November. A ridge running east and west is thrown up about a foot high. Many of the growers have attachments which form a shelf on the south side of the ridge, and it is on this shelf that the plants are set. The rows are usually about 2½ feet apart. The plants should be set deeply enough to cover the stem being careful that the bud is not covered.

In the spring cultivation and hoeing are started and the ridges are gradually worked down to the level. It is customary to top dress in the spring beginning about the first of April with from one hundred to one hundred and fifty pounds per acre of nitrate of soda. Sometimes two or three applications are made. Mulching is not generally practiced, the ridge of soil serving to protect from the cold, drying winter winds.

THE ANNUAL MEETINGS

Arrangements have been made to hold the next annual meetings of the Association together with other agricultural organizations at the Lord Baltimore Hotel in Baltimore. The Vegetable Growers will have two morning sessions, Wednesday, January 8th and Thursday, January 9th. The Secretary is making plans for the program which must be in the hands of the printers by December 1st. Here is your opportunity to aid the Secretary in selecting subjects which will be interesting and worth while. If you have any suggestions both as to topics and speakers, the Secretary will appreciate it greatly if you will make your wishes known.

WHY CULTIVATE?

The usual reasons given for cultivating crops are, (1) conservation of moisture, (2) the destruction of weeds, (3)

increase of rate of nitrate formation and release of mineral elements in the soil, (4) increased aeration, (5) increased growth of soil organisms, and (6) increased absorption and retention of heat.

The conservation of moisture due to the destruction of weeds is undoubtedly the most important result secured. Experimental work has shown that keeping down the weeds by scraping the surface gives as good results with corn as does cultivation.

Some work done with vegetables at Cornell University in 1919 and 1920 gave varying results depending upon the type of crop grown. Yields of onions on plots cultivated once a week were heavier than on plots simply scraped to keep down weeds, while carrots were not benefitted by cultivation. Celery and lettuce were benefitted by cultivation while cabbage was not. Study of the root systems gives a possible explanation to differences in the results. With those crops which fill the soil extensively with their root systems, The moisture rising through capillary action is probably intercepted so that comparatively little is lost through evaporation from the surface of the ground.

More experimental work should be done to study the effect of cultivation on soils. Were it not for the need of controlling weeds, it might be possible to plant some crops closer and thus secure larger returns from a given area.

Irish Cobbler For Seed

Dr. R. A. Jehle, Specialist in Plant Pathology of the Extension Service furnishes the following report of inspections of potatoes, mostly Irish Cobbler, in Worcester and Sumerset Counties.

The total number of growers asking for inspections were 138. Of these 63 have entire acreage eligible for certification, 7 have some acreage eligible, while 55 were disqualified and 13 were discontinued.

The number of acres eligible are 309.75 disqualified 176.25 and discontinued 32.25. Before these potatoes can be certified they must still be bin inspected. The records of field inspections are available in the offices of the county agents and inquires from prospective buyers should be addressed to them. C. Z. Keller is agent at Princess Anne and R. T. Grout is at Snow Hill.

VEGETABLE GROWERS' NEWS LETTER.

Issued by
The Maryland Vegetable Growers' Association,
W. R. Ballard, Secretary-Treasurer.

Vol. VI. No. 11 College Park, Maryland. November, 1929.

Certified Potatoes in Demand

Irish Cobbler seed stock grown in Worcester and Somerset counties is in active demand especially in New Jersey where there is a short crop. So far about fifteen carloads of certified seed stock have been shipped and a few more cars will be available. The price has ranged from $5.00 to $6.00 per barrel. Buyers seem to be recognizing the value of the inspection work being done by the Extension Service and are guided largely by the records of inspections. Because of the scarcity of certified stock, buyers are purchasing considerable uncertified stock which shows no more than from 7% to 10% disease.

Sweet Potato Growers Take Notice

If you are interested in this crop, you should have bulletin No. 311 of the Maryland Experiment Station, entitled, "Fertilizer Studies and Production of Sweet Potatoes" by Fred W. Geise.

Tests made at Salisbury and in Prince George's County over a period of five years show that a complete fertilizer gives slightly higher yields than do single elements or incomplete mixtures. Potash seems to be relatively of greatest importance with nitrogen next and phosphoric acid of least importance. For medium sandy soils of fair fertility 800 to 1000 lbs. of a 3 - 8 - 8 fertilizer is recommended, while on soils of high fertility a 2 - 8 - 10 is to be preferred.

One of the most interesting sections is, that discussing measures for the prevention and control of diseases which annually take an immense toll from this crop. Stem rot, black rot and soft rot are the most destructive of the diseases commonly found. Seed selection and treatment of tubers combined make effective control measures.

Program Plans Underway

Tentative plans for the annual meetings next January contemplate a joint session with the Crop Improvement Association on Wednesday to consider the general subject of soil treatment with particular reference to certain truck crops. One feature of this session will be an address by Dr. L. H. Flint, of the U.S. Department of Agriculture, on the utilization of the paper mulch in the growing of truck crops.

The second session will probably be given over to a discussion of insects and diseases and a consideration of some phases of the coming industry.

Variety Studies of Spinach

Bulletin 312 of the Maryland Experiment Station under the above title discusses forty-five named varieties of spinach listed by the seed trade.

These varieties have been grown and studied with reference to their suitability as (1) a fall crop for fall harvest, (2) as an early spring crop and (3) as a late spring crop. The forty-five varieties have been classified into six groups, determined by the character of the leaf whether flat or savoyed, and the relative time of flower stalk formation, whether early or late. Many of the named varieties appear to be identical or to show minor differences which may not be necessarily fixed. On the basis of this study definite recommendations are made as to varieties adapted to the various uses.

The bulletin is well illustrated and the varietal descriptions are full. The classification of the varieties is based largely on horticultural practices.

The Old Turnip Patch

The season seems to have been unusually favorable for the development of a crop of high quality turnips. Quality seems to be correlated with rapid growth and this is one reason why a fertile soil seems to be required. Overgrown specimens are not desirable as they are inclined to crack and to become more or less pithy in texture. Well grown purple top white globe turnips of medium size make a very attractive sight when properly displayed. The yellow fleshed rutabagas are preferred by some but the purple top white globe types are the market favorites.

Do Your Vegetables Contain Iodine?

Considerable interest has developed in recent years in the relation of iodine to abnormalities commonly classed as "goiter". Studies made during the war showed that this disease was most prevalent in regions where the soil is largely of glacial origin where the waters are extremely low in iodine content. Recent studies show that many vegetables contain iodine and in regions of little goiter contain more iodine than do those grown in sections where goiter is prevalent.

Studies in South Carolina where goiter is rare show that summer squash, potatoes, cabbage, cucumbers, and string beans are relative high in their iodine content.

Dr. Roe E. Remington, Director of the Laboratory, South Caroline Food Research Commission, recommends in the daily diet especially for young children and mothers at least one leafy vegetable, one root vegetable and a potato, all grown in regions where the supply of minerals is adequate to supply the necessary calcium, iron, iodine, manganese, etc. during the important formative period of the physical organism.

The Directors of the Tri-State Packers Association are asking the agricultural colleges of Maryland, Delaware and New Jersey to study the iodine content of fruits and vegetables both raw and canned produced in the Tri-State territory.

VEGETABLE GROWERS' NEWS LETTER

Issued by
The Maryland Vegetable Growers' Association.
W. R. Ballard, Secretary-Treasurer.

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Vol. VI. No. 12. College Park, Maryland. December, 1929.

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The Program

The following program has been arranged for the annual meeting in Baltimore and it is hoped that the members will attend and take an active part in the discussions. As will be noted the first day's session will be held jointly with the Crop Improvement Association and it is believed that the subjects to be discussed will be of general interest.

MARYLAND VEGETABLE GROWERS ASSOCIATION

Twelfth Annual Meeting.

Lord Baltimore Hotel, Baltimore, Md.
Parlors D. and E. (Joint Session with Crop Improvement Association).

Wednesday, January 8th, 1930.

Fred Jones, President Crop Improvement Association.
G. R. Cobb, President Maryland Vegetable Grower's Association.

10:00 a.m. Call to Order.

10:05 a.m. Maintaining Fertility For Truck Crops.
Thomas H. White,
College Park, Md.

10:35 a.m. Tomato Fertilizers For Quality.
R. P. Thomas,
College Park, Md.

10:55 a.m. Fertilizers For Early Potatoes.
G. V. Roagland,
U.S. Department of Agriculture.

11:25 a.m. The Practical Aspects of Paper Mulch in Vegetable Growing.
L. H. Flint,
U.S. Department of Agriculture.

11:55 a.m. Announcements.

Thursday, January 9th, 1930.
Parlors I. and J.

10:00 a.m. Call to Order.

10:05 a.m. Production of High Quality Potato Seed Stocks.
R. A. Jehle,
College Park, Md.

10:35 a.m. The Control of the Mexican Bean Beetle.
E. N. Cory,
College Park, Md.

11:05 a.m. Maryland's Canning Industry.
L. M. Goodwin,
Ridgely, Md.

THE STandard Container Act.

On November 1st of the present year there went into effect a law passed by the seventieth Congress which is designed to establish standard capacities for hampers, round stave baskets, and splint baskets for fruits and vegetables. This act applies to use within a state as well as to interstate commerce.

The standard sizes established for hampers or round stave baskets are as follows: one-eighth, one-fourth, one-half, five-eighths, three-fourths, 1, 1¼, 1½, and 2 bushel.

For splint baskets the standard sizes are 4, 8, 16, 24, and 32 quarts.

Climax baskets, berry boxes, and till baskets were standardized in 1916.

Manufacturers of hampers, round stave baskets, and splint baskets must submit specifications to the Secretary of Agriculture for approval

Modern Mushroom Growing

The production of mushrooms is a highly specialized industry in Eastern Pennsylvania. One of the most important factors in the successful culture of this crop is the use of viable spawn. At Kenneth Square, Pa. a research laboratory has been established for the study of problems incident to mushroom culture. The spawn is being produced in the laboratory under careful supervision, and fresh cultures have largely superseded the old dry brick method.

The form grown in this country is the Agaricus campestris species although a number of other edible forms are found in nature.

Standardizing Vegetable Varieties

The United States Department of Agriculture has undertaken a series of studies looking toward the establishment of vegetable variety type books for the leading varieties grown in the United Stat No attempt will be made to study the entire field at once but a be-

ginning has œen made with cabbage, tomatoes and peas. Mr. V. R. Boswell of the U.S. Bureau of Plant Industry is directing this work and he has enlisted the cooperation of specialists in different parts of the country in this work.